AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): An automatic sound field correcting system in an audio system for supplying a plurality of input audio signals to a plurality of sound generating means via a plurality of signal transmission lines,

each of the plurality of signal transmission lines including an equalizer for adjusting a frequency characteristic of the audio signal, a channel-to-channel level adjusting means for adjusting a level of the audio signal, and a delaying means for adjusting a delay time of the audio signal, so that the input audio signals are supplied to said sound generating means via said equalizers, said channel-to-channel level adjusting means, and said delaying means,
said correcting system comprising:

a noise generating means for supplying a noise to respective signal transmission lines independently in correcting a sound field;

detecting means for detecting reproduced sounds of the noise reproduced by said sound generating means;

frequency characteristic correcting means for correcting frequency characteristics of the equalizers based on detection results of said detecting means;

channel-to-channel level correcting means for correcting an adjusted amount of said plurality of channel-to-channel level adjusting means based on the detection results of said detecting means, wherein the channel-to-channel level correcting means corrects the adjusted

amount of said plurality of channel-to-channel level adjusting means based on one data of sound collecting data, said one data of the sound collecting data having a minimum value with respect to at least one other data of the sound collecting data; and

phase characteristic correcting means for calculating phase characteristics of the reproduced sounds reproduced by said sound generating means based on the detection results of said detecting means and also correcting delay times of said delaying means based on calculated phase characteristics,

wherein a size of said sound generating means is determined by comparing gain data with a threshold.

2. (original): The automatic sound field correcting system according to claim 1, further comprising:

a controlling means for causing said channel-to-channel level correcting means to correct an adjusted amount of said channel-to-channel level adjusting means and causing said phase characteristic correcting means to correct the delay times of said delaying means, after causing said frequency characteristic correcting means to correct the adjusted amount of said equalizers.

3. (original): The automatic sound field correcting system according to claim 1, wherein said noise generating means supplies a pink noise as the noise to said equalizers.

4. (original): The automatic sound field correcting system according to claim 2, wherein said channel-to-channel level correcting means corrects respective adjusted amounts of said plurality of channel-to-channel level adjusting means such that levels of reproduced sounds reproduced by said plurality of sound generating means is made substantially equal over a full audio frequency band.

5. (currently amended): An automatic sound field correcting system in an audio system for supplying a plurality of input audio signals to all frequency band sound generating means and a low frequency band exclusively reproducing sound generating means via a plurality of signal transmission lines,

each of the plurality of signal transmission lines including an equalizer for adjusting a frequency characteristic of the audio signal, a channel-to-channel level adjusting means for adjusting a level of the audio signal, and a delaying means for adjusting a delay time of the audio signal, so that the input audio signals are supplied to said sound generating means via said equalizers, said channel-to-channel level adjusting means, and said delaying means,

said correcting system comprising:

a noise generating means for supplying a noise to said respective signal transmission lines independently in correcting a sound field;

detecting means for detecting reproduced sounds of the noise reproduced by said sound generating means;

frequency characteristic correcting means for correcting frequency characteristics of said equalizers based on detection results of said detecting means;

first channel-to-channel level correcting means for correcting an adjusted amount of said plurality of channel-to-channel level adjusting means of the signal transmission lines, in which the all frequency band sound generating means are provided, out of said plurality of channel-to-channel level adjusting means based on the detection results of said detecting means;

phase characteristic correcting means for calculating phase characteristics of the reproduced sounds reproduced by respective sound generating means based on the detection

results of said detecting means and also correcting delay times of said delaying means based on calculated phase characteristics; and

second channel-to-channel level correcting means for correcting an adjusted amount of the plurality of channel-to-channel level adjusting means of the signal transmission lines, in which the low frequency band exclusively reproducing sound generating means are provided, based on the detection results of said detecting means,

wherein the first channel-to-channel level correcting means and the second channel-to-channel level correcting means correct the adjusted amount of said plurality of channel-to-channel level adjusting means based on one data of the sound collecting data, said one data of the sound collecting data having a minimum value with respect to at least one other data of the sound collecting data,

wherein a size of said sound generating means is determined by comparing gain data with a threshold.

6. (original): The automatic sound field correcting system according to claim 5, further comprising:

controlling means for causing said first channel-to-channel level correcting means to perform the correction, then causing said phase characteristic correcting means to perform the correction, and then causing said second channel-to-channel level correcting means to perform the correction after causing said frequency characteristic correcting means to perform the correction.

7. (original): The automatic sound field correcting system according to claim 5, wherein

said second channel-to-channel level correcting means corrects an adjusted amount of said channel-to-channel level adjusting means such that a sum of a spectrum average level of the reproduced sound reproduced by all frequency band sound generating means in a low frequency band and a spectrum average level of the reproduced sound reproduced by a low frequency band exclusively reproducing sound generating means in the low frequency band and a spectrum average level of the reproduced sound in a middle/high frequency band reproduced by the all frequency band sound generating means are set equal to a ratio of target curve data.

8. (original): The automatic sound field correcting system according to claim 1 or 5, wherein

said phase characteristic correcting means calculates phase characteristics of the reproduced sounds based on detection results of said detecting means by a correlation calculating approach.

9. (currently amended): A sound field correcting method in an audio system including a plurality of signal transmission lines for supplying a plurality of input audio signals separately to all frequency band sound generating means and a low frequency band exclusively reproducing sound generating means, each of the plurality of signal transmission lines including an equalizer for adjusting a frequency characteristics of the audio signal, a channel-to-channel level adjusting means for adjusting a level of the audio signal, and a delaying means for adjusting a delay time of the audio signal, so that the input audio signals are supplied to said sound generating means via said equalizers, said channel-to-channel level adjusting means, and said delaying means,

said method comprising:

a first step of measuring reproduced sounds reproduced by said all frequency band sound generating means and a low frequency band exclusively reproducing sound generating means by inputting a noise, and then correcting frequency characteristics of said equalizers based on measured results;

a second step of measuring the reproduced sounds reproduced by said all frequency band sound generating means and said low frequency band exclusively reproducing sound generating means by inputting the noise, and then correcting an adjusted amount of said channel-to-channel level adjusting means for said all frequency band sound generating means based on the measured results;

a third step of measuring the reproduced sounds reproduced by said all frequency band sound generating means and said low frequency band exclusively reproducing sound generating means by inputting the noise, and then correcting delay times of said delaying means based on the measured results;

a fourth step of measuring independently reproduced sounds reproduced by said all frequency band sound generating means and reproduced sounds reproduced by said low frequency band exclusively reproducing sound generating means; and

a fifth step of correcting an adjusted amount of said channel-to-channel level adjusting means based on measured results measured by the fourth step such that a sum of a spectrum average level of the reproduced sounds reproduced by said all frequency band sound generating means in a low frequency band and a spectrum average level of the reproduced sound reproduced by said low frequency band exclusively reproducing sound generating means in the low frequency band and a spectrum average level of the reproduced sound reproduced by said all

frequency band sound generating means in a middle/high frequency band are set equal to a ratio of target curve data, wherein the adjusted amount of said channel-to-channel level adjusting means is corrected based on one data of the sound collecting data, said one data of the sound collecting data having a minimum value with respect to at least one other data of the sound collecting data,

wherein a size of said sound generating means is determined by comparing gain data with a threshold.

10. (original): The sound field correcting method according to claim 9, wherein measurement of the reproduced sounds in the first step is performed at plural times, and then the frequency characteristics of said equalizers are corrected based on plural times measured results.

11. (original): The sound field correcting method according to claim 9, wherein measurement of the reproduced sounds in the second step is performed at plural times, and then the adjusted amount of said channel-to-channel level adjusting means is corrected based on plural times measured results.

12. (original): The sound field correcting method according to claim 9 or 10, wherein the frequency characteristics of said equalizers are corrected based on multiplied results of the measured result and the target curve data in the first step.

13. (currently amended): An automatic sound field correcting system in an audio system which supplies a plurality of input audio signals to a plurality of sound generators via a plurality of signal transmission lines each comprising an equalizer, a channel-to-channel attenuator, and a delay circuit, said sound field correcting system comprising:

a noise signal generator which independently supplies a noise signal to respective signal transmission lines;

a sound detection circuit which detects sounds of noise signals reproduced by said sound generators;

a frequency characteristic correcting circuit which corrects frequency characteristics of said equalizer of each of said signal transmission lines based on a detection result of said sound detection circuit;

a channel-to-channel level correcting circuit which corrects an adjusted amount of said channel-to-channel attenuator of each of said signal transmission lines based on the detection result of said sound detecting circuit, wherein the channel-to-channel level correcting circuit corrects the adjusted amount of said channel-to-channel attenuator based on one data of sound collecting data, said one data of the sound collecting data having a minimum value with respect to at least one other data of the sound collecting data; and

a phase characteristic correcting circuit which calculates phase characteristics of the reproduced sounds reproduced by said sound generators based on the detection results of said sound detecting circuit, said phase characteristic correcting circuit correcting delay times of said delay circuit of each of said signal transmission lines based on said calculated phase characteristics,

wherein a size of said sound generators is determined by comparing gain data with a threshold.

14. (previously presented): The automatic sound field correcting system according to claim 13, further comprising:

a control circuit which controls said channel-to-channel level correcting circuit to correct said adjusted amount of said channel-to-channel attenuator of each of said signal transmission lines, and controls said phase characteristic correcting circuit to correct the delay times of said delay circuit of each of said signal transmission lines, after controlling said frequency characteristic correcting circuit to correct the adjusted amount of said equalizer of each of said signal transmission lines.

15. (previously presented): The automatic sound field correcting system according to claim 13, wherein said noise signal generator supplies a pink noise as the noise to said equalizer of each of said signal transmission lines.

16. (previously presented): The automatic sound field correcting system according to claim 14, wherein said channel-to-channel level correcting circuit corrects respective adjusted amounts of said channel-to-channel attenuator of each of said signal transmission lines such that levels of reproduced sounds reproduced by said plurality of sound generators is made substantially equal over a full audio frequency band.

17. (currently amended): An automatic sound field correcting system in an audio system which supplies a plurality of input audio signals to a plurality of sound generators via a plurality of signal transmission lines each comprising an equalizer, a channel-to-channel attenuator, and a delay circuit,

said sound generators comprising at least one first sound generator which generates an all frequency band sound and at least one second sound generator which generates a low frequency band sound exclusively,

said sound field correcting system comprising:

a noise signal generator which independently supplies a noise signal to respective signal transmission lines;

a sound detection circuit which detects sounds of the noise signals reproduced by said sound generators;

a frequency characteristic correcting circuit which corrects frequency characteristics of said equalizer of each of said signal transmission lines based on a detection result of said sound detection circuit;

a first channel-to-channel level correcting circuit which corrects an adjusted amount of said channel-to-channel attenuator of each of said signal transmission lines having said at least one first sound generator, based on the detection result of said sound detection circuit;

a phase characteristic correcting circuit which calculates phase characteristics of the reproduced sounds reproduced by said sound generators based on the detection results of said sound detection circuit, said phase characteristic correcting circuit correcting delay times of said delay circuit of each of said signal transmission lines based on said calculated phase characteristics; and

second channel-to-channel level correcting circuit which corrects an adjusted amount of said channel-to-channel attenuator of each of said signal transmission lines having said at least one second sound generator, based on the detection result of said sound detection circuit,

wherein the first channel-to-channel level correcting circuit and the second channel-to-channel level correcting circuit correct the adjusted amount of said plurality of channel-to-channel level attenuator based on one data of the sound collecting data, said one data of the

sound collecting data having a minimum value with respect to at least one other data of the sound collecting data,

wherein a size of said sound generators is determined by comparing gain data with a threshold.

18. (previously presented): The automatic sound field correcting system according to claim 17, further comprising:

a control circuit which controls said first channel-to-channel level correcting circuit to corrects said adjusted amount of said channel-to-channel attenuator of each of said signal transmission lines having said at least one first sound generator, then controls said phase characteristic correcting circuit to correct said delay times of said delay circuit of each of said signal transmission lines, and then controls said second channel-to-channel level correcting circuit to correct said adjusted amount of said channel-to-channel attenuator of each of said signal transmission lines having said at least one second sound generator after causing said frequency characteristic correcting circuit to correct said frequency characteristics of said equalizer of each of said signal transmission lines.

19. (previously presented): The automatic sound field correcting system according to claim 17, wherein said second channel-to-channel level correcting circuit corrects said adjusted amount of said channel-to-channel attenuator of each of said signal transmission lines having said at least one second sound generator such that a sum of a spectrum average level of the reproduced sound in a low frequency band reproduced by said at least one first sound generator, a spectrum average level of the reproduced sound in the low frequency band reproduced by said at least one second sound generator, and a spectrum average level of the reproduced sound in a

middle/high frequency band reproduced by said at least one first sound generator are set equal to a ratio of target curve data.

20. (previously presented): The automatic sound field correcting system according to claim 13 or 17, wherein said phase characteristic correcting circuit calculates phase characteristics of the reproduced sounds based on detection results of said sound detection circuit by a correlation calculating approach.

21. (currently amended): A sound field correcting method in an audio system including a plurality of signal transmission lines for supplying a plurality of input audio signals separately to a plurality of sound generators,

said sound generators comprising at least one first sound generator which generates an all frequency band sound and at least one second sound generator which generates a low frequency band sound exclusively,

each of the plurality of signal transmission lines comprising an equalizer which adjusts a frequency characteristic of the audio signal, a channel-to-channel attenuator which adjusts a level of the audio signal, and a delay circuit which adjusts a delay time of the audio signal,

wherein the input audio signals are supplied to said sound generators via said equalizer, said channel-to-channel attenuator, and said delay circuit of respective of said signal transmission lines,

said method comprising:

a first step of measuring reproduced sounds reproduced by said sound generators by inputting a noise, and then correcting frequency characteristics of said equalizer of each of said signal transmission lines, based on measured results;

a second step of measuring the reproduced sounds reproduced by said sound generators by inputting the noise, and then correcting an adjusted amount of said channel-to-channel attenuator of each of said signal transmission lines having said at least one first sound generator, based on the measured results;

a third step of measuring the reproduced sounds reproduced by said sound generators by inputting the noise, and then correcting delay times of said delay circuit of each of said signal transmission lines, based on the measured results;

a fourth step of measuring independently reproduced sounds reproduced by said at least one first sound generator and reproduced sounds reproduced by said at least one second sound generator; and

a fifth step of correcting an adjusted amount of said channel-to-channel attenuator of each of said signal transmission lines, based on measured results measured by the fourth step such that a sum of a spectrum average level of the reproduced sounds in a low frequency band reproduced by said at last one first sound generator, a spectrum average level of the reproduced sound in the low frequency band reproduced by said at least one second sound generator, and a spectrum average level of the reproduced sound in a middle/high frequency band reproduced by said at least one first sound generator are set equal to a ratio of target curve data,

wherein the adjusted amount of said channel-to-channel attenuator is corrected based on one data of the sound collecting data, said one data of the sound collecting data having a minimum value with respect to at least one other data of the sound collecting data,

wherein a size of said sound generators is determined by comparing gain data with a threshold.

22. (previously presented): The sound field correcting method according to claim 21, wherein measurement of the reproduced sounds in the first step is performed at plural times, and then the frequency characteristics of said equalizer of each of said signal transmission lines are corrected based on plural times measured results.

23. (previously presented): The sound field correcting method according to claim 21, wherein measurement of the reproduced sounds in the second step is performed at plural times, and then the adjusted amount of said channel-to-channel attenuator of each of said signal transmission lines is corrected based on plural times measured results.

24. (previously presented): The sound field correcting method according to claim 21 or 22, wherein the frequency characteristics of said equalizer of each of said signal transmission lines are corrected based on multiplied results of the measured result and the target curve data in the first step.

Claims 25-30 (canceled).